



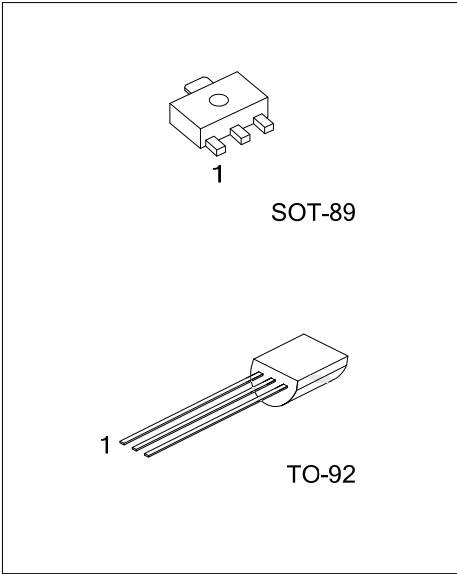
**MJE13001**

**NPN SILICON TRANSISTOR**

**NPN SILICON POWER TRANSISTOR**

■ **FEATURES**

- \* Collector-base voltage:  $V_{(BR)CBO}=600V$
- \* Collector current:  $I_C=0.2A$



■ **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
-	MJE13001G-x-AB3-A-R	SOT-89	E	C	B	Tape Reel
-	MJE13001G-x-AB3-F-R	SOT-89	B	C	E	Tape Reel
MJE13001L-x-T92-B	MJE13001G-x-T92-B	TO-92	B	C	E	Tape Box
MJE13001L-x-T92-K	MJE13001G-x-T92-K	TO-92	B	C	E	Bulk
MJE13001L-x-T92-A-B	MJE13001G-x-T92-A-B	TO-92	E	C	B	Tape Box
MJE13001L-x-T92-A-K	MJE13001G-x-T92-A-K	TO-92	E	C	B	Bulk

Note: Pin Assignment: C: Collector B: Base E: Emitter

<p>MJE13001G-x-AB3-A-B</p> <p>(1)Packing Type (2)Pin Assignment (3)Package Type (4)Rank (5)Green Package</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel (2) refer to Pin Assignment (3) AB3: SOT-89, T92: TO-92 (4) x: refer to Classification of <math>h_{FE1}</math> (5) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ **MARKING**

SOT-89	TO-92
<p>1</p>	<p>1</p>

### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage		$V_{CEO}$	400	V
Collector-Base Voltage		$V_{CBO}$	600	V
Emitter Base Voltage		$V_{EBO}$	7	V
Collector Current		$I_C$	200	mA
Collector Power Dissipation	SOT-89	$P_C$	550	mW
	TO-92		750	
Junction Temperature		$T_J$	+150	°C
Storage Temperature		$T_{STG}$	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

### ■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C=100\mu\text{A}, I_E=0$	600			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=1\text{mA}, I_B=0$	400			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E=100\mu\text{A}, I_C=0$	7			V
Base-Emitter Voltage	$V_{BE}$	$I_E=100\text{mA}$			1.1	V
Collector Cutoff Cut-Off Current	$I_{CBO}$	$V_{CB}=600\text{V}, I_E=0\text{A}$			100	$\mu\text{A}$
Collector Emitter Cut-Off Current	$I_{CEO}$	$V_{CE}=400\text{V}, I_B=0$			200	$\mu\text{A}$
Emitter Cutoff Cut-Off Current	$I_{EBO}$	$V_{EB}=7\text{V}, I_C=0\text{A}$			100	$\mu\text{A}$

#### ON CHARACTERISTICS

DC Current Gain	$h_{FE1}^*$	$V_{CE}=20\text{V}, I_C=20\text{mA}$	10		70	
	$h_{FE2}$	$V_{CE}=10\text{V}, I_C=0.25\text{mA}$	5			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=50\text{mA}, I_B=10\text{mA}$			0.5	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=50\text{mA}, I_B=10\text{mA}$			1.2	V

#### SMALL-SIGNAL CHARACTERISTICS

Current Gain Bandwidth Product	$f_T$	$I_C=20\text{mA}, V_{CE}=20\text{V}, f=1\text{MHz}$	8			MHz
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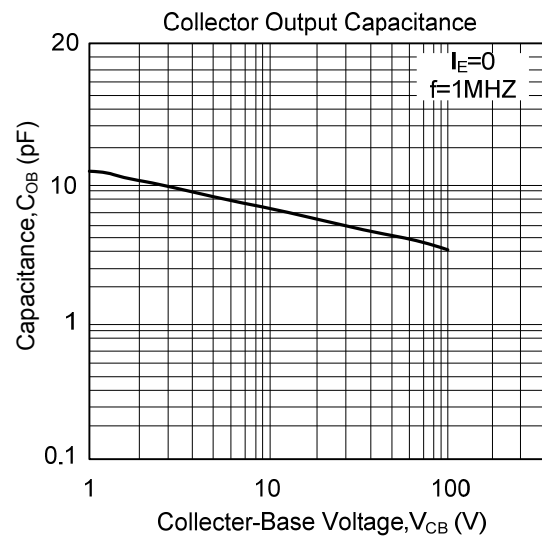
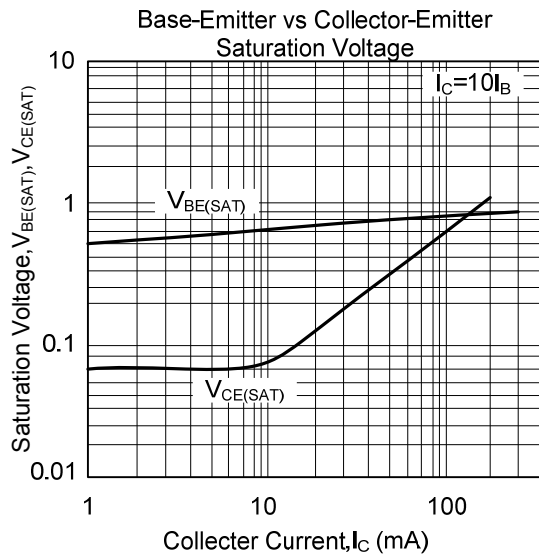
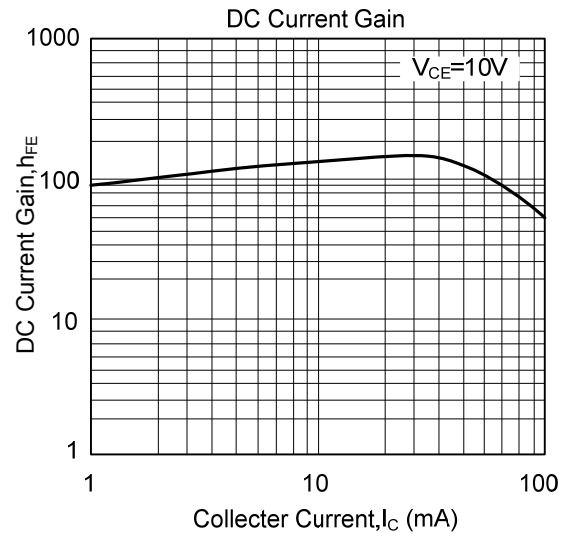
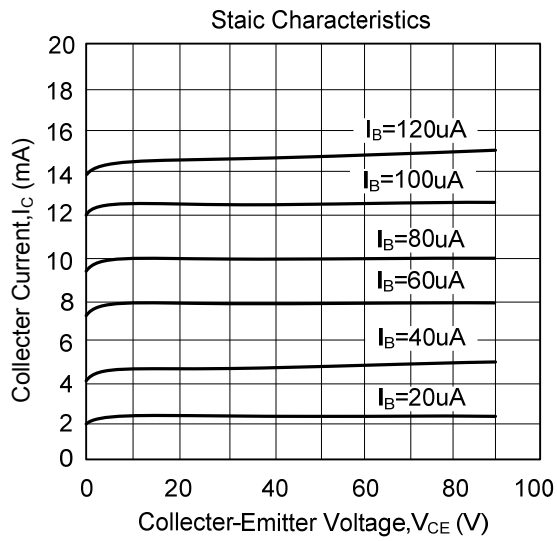
#### Resistive Load

Storage Time	$t_s$	$I_C=50\text{mA}, I_{B1}=-I_{B2}=5\text{mA},$			1.5	$\mu\text{s}$
Fall Time	$t_f$	$V_{CC}=45\text{V}$			0.3	$\mu\text{s}$

### ■ CLASSIFICATION OF $h_{FE1}^*$

RANK	A	B	C	D	E	F	G	H	I	J	K	L
RANGE	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70

## TYPICAL CHARACTERISTICS



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